

WHAT IS CLAIMED IS:

1. A process of growing a silicon dioxide thin film on a part in a chamber by a sequential chemical vapor deposition process, which comprises:
  - removing gases from the chamber;
  - exposing the part to a first reactant by introducing a first reactant comprising a gaseous silicon compound that does not contain oxygen into the chamber, wherein the first reactant adsorbs on the part, and wherein the first reactant includes the silicon of the thin film to be formed;
  - removing gases from the chamber;
  - exposing the part, coated with the first reactant to hydrogen atoms, wherein the hydrogen atoms reduce the first reactant on the part to silicon;
  - removing gases from the chamber; and
  - exposing the part coated with silicon to oxygen, wherein the oxygen converts the silicon on the part to silicon dioxide.
2. The process of Claim 1, wherein the part is maintained at temperatures of less than 300°C in the chamber.
3. The process of Claim 1, wherein the first reactant includes a halogen atom.
4. The process of Claim 3, wherein the first reactant is dichlorosilane.
5. The process of Claim 1, wherein the first reactant is selected from the group consisting of silane and tetramethylsilane.
6. The process of Claim 1, wherein the atomic hydrogen is generated in a radical generator in communication with the chamber.
7. The process of Claim 1, wherein the atomic hydrogen is generated by surrounding the chamber with an RF excitation coil.

8. A process of growing silicon dioxide thin film by a sequential chemical vapor deposition process, which comprises:

placing a part in a chamber;

removing gases from the chamber;

introducing a first reactant of gaseous silicon precursor containing oxygen into the chamber to expose the part to the first reactant, wherein the first reactant comprises silicon and oxygen, and wherein the first reactant adsorbs on the part;

removing gases from the chamber;

exposing the part coated with the first reactant to oxygen atoms, wherein the oxygen atoms convert the first reactant on the part to silicon dioxide; and

removing gases from the chamber.

9. The process of Claim 8, wherein the first reactant is tetraethoxysilane.

10. The process of Claim 8, wherein the oxygen atoms are generated in a radical generator in communication with the chamber.

11. The process of Claim 8, wherein the atomic oxygen is generated by surrounding the chamber with an RF excitation coil.